

Nebencal Update, on YIAI

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Algorithm

Ubercalibration à la SDSS

with the option to calibrate separately in overlapping Healpix regions and then normalize the regions at the end.
(To limit memory usage.)

An internal, relative calibration, with ~one ZP calculated w.r.t a standard catalog at the end.

Currently calibrating exposure by exposure

1. Nebencal each filter independently
2. Match objects across filters and calculate g-r
3. Nebencal again, including color term correction

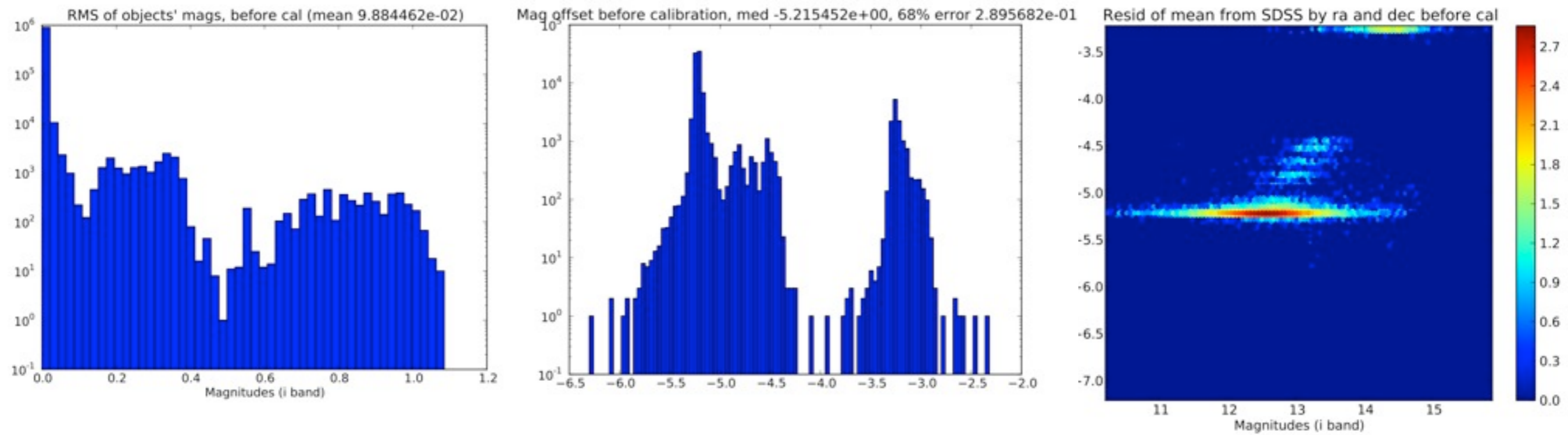
Color term Correction by Ting Li

Returns the correction as a function of
band, MJD, airmass, g-r, focal plane radius

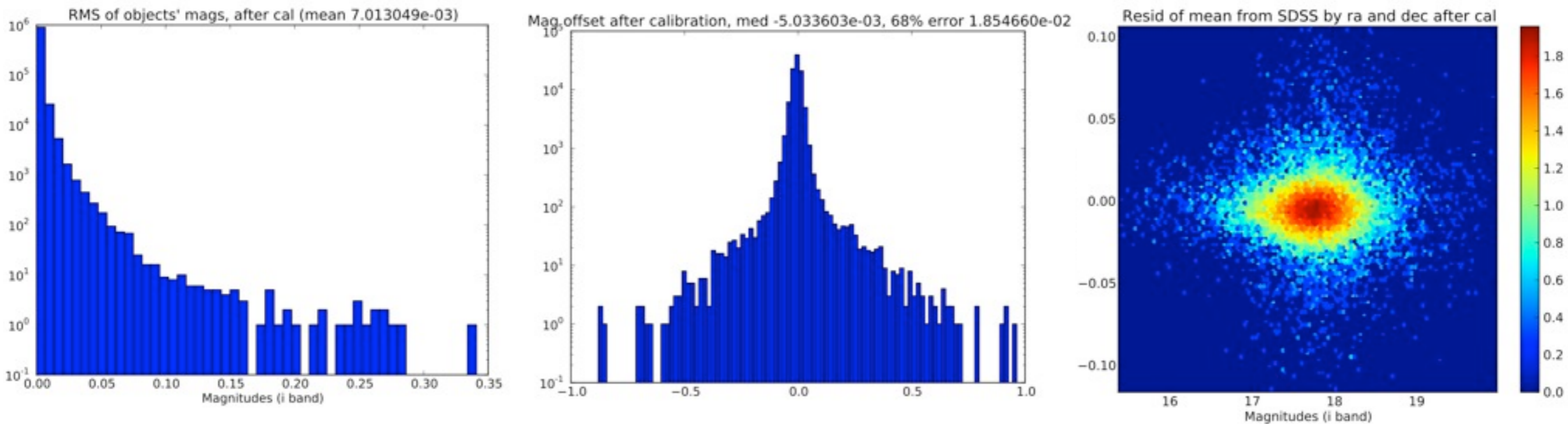
1. Airmass of the observation, from the DB
2. Water vapor in the atmosphere, from the observation date + GPS and aTmCam data.
3. Filter throughput position dependence, from interpolation of DECam measurements

i band

before

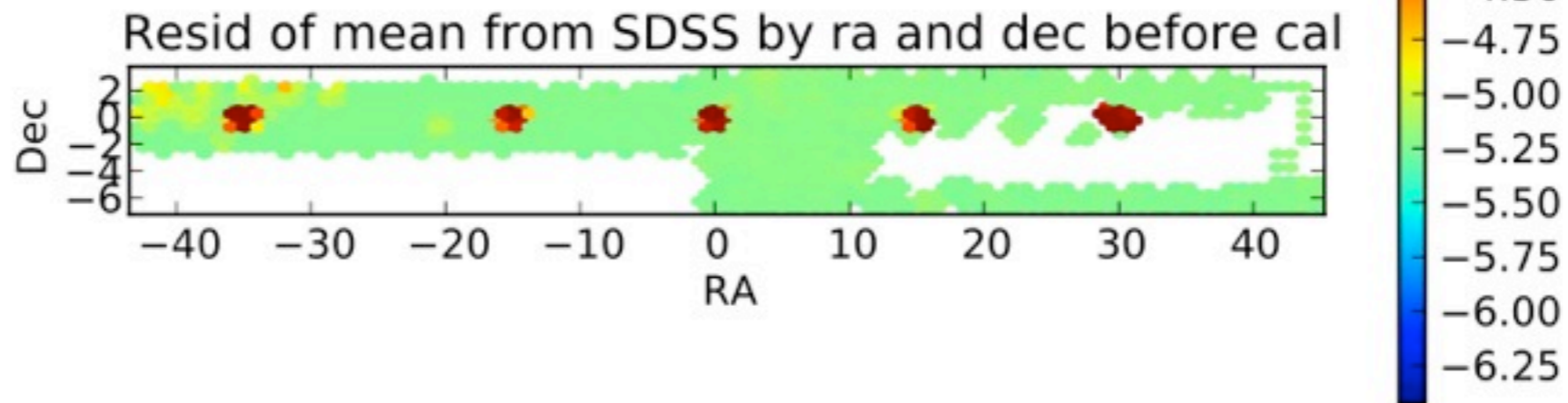


after

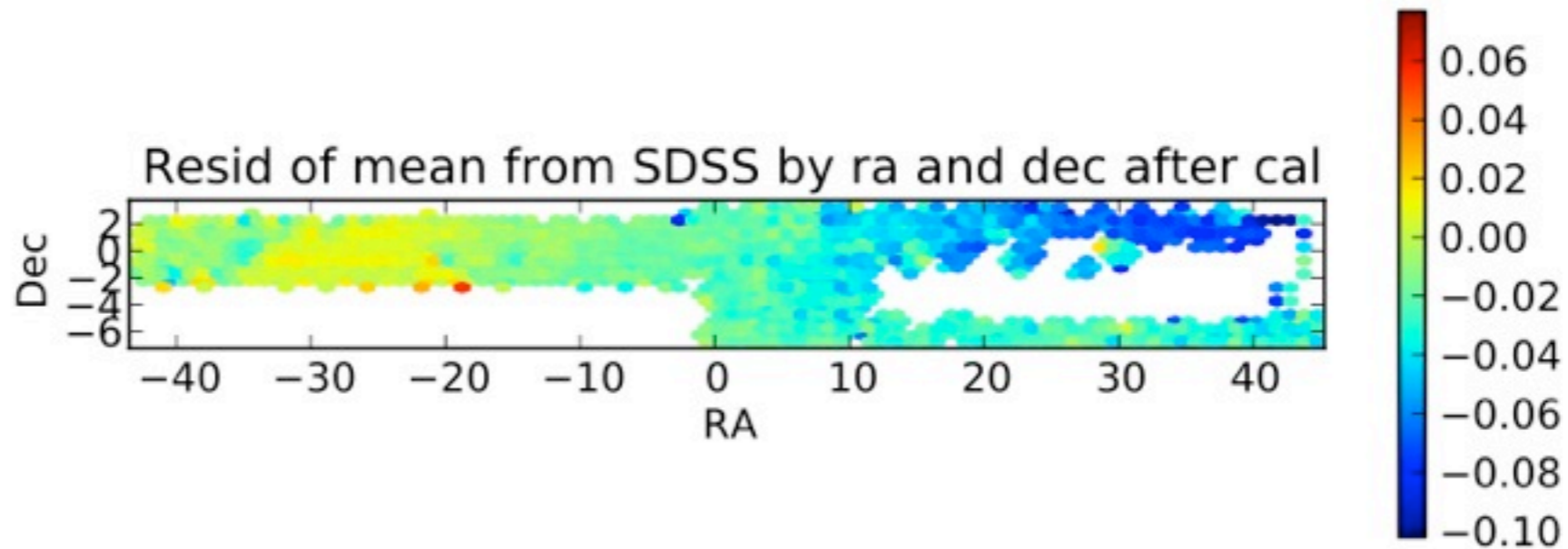


i band

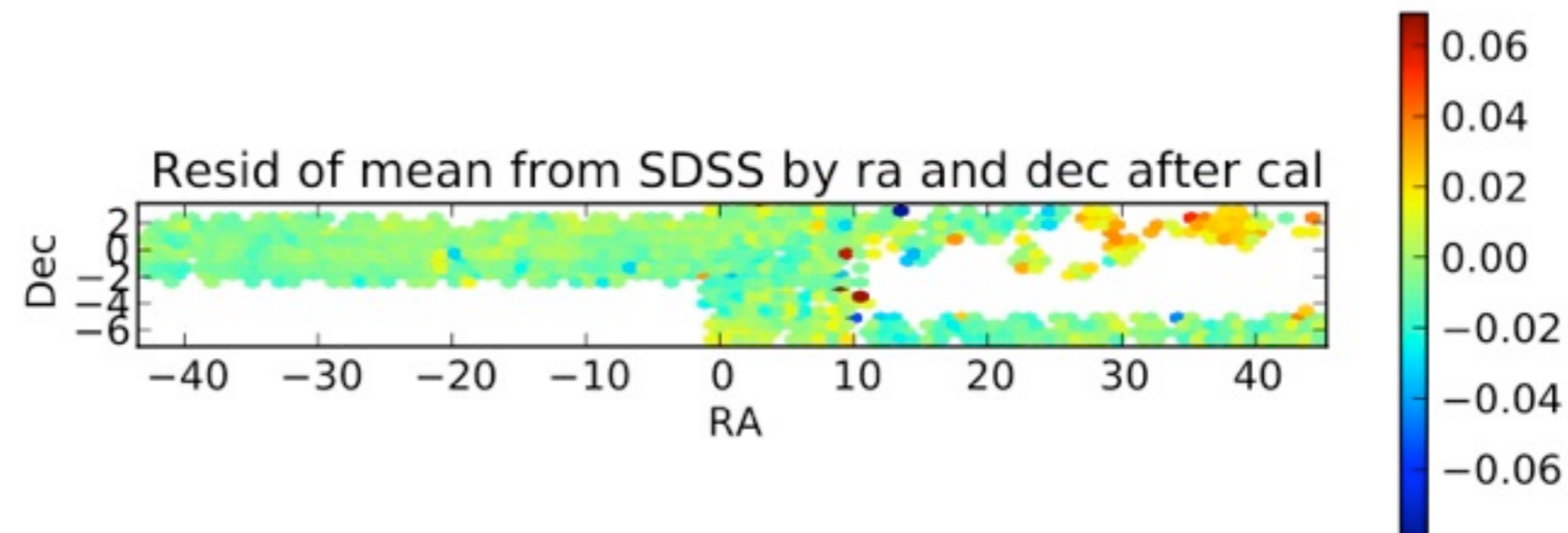
before



after nebencal
#1

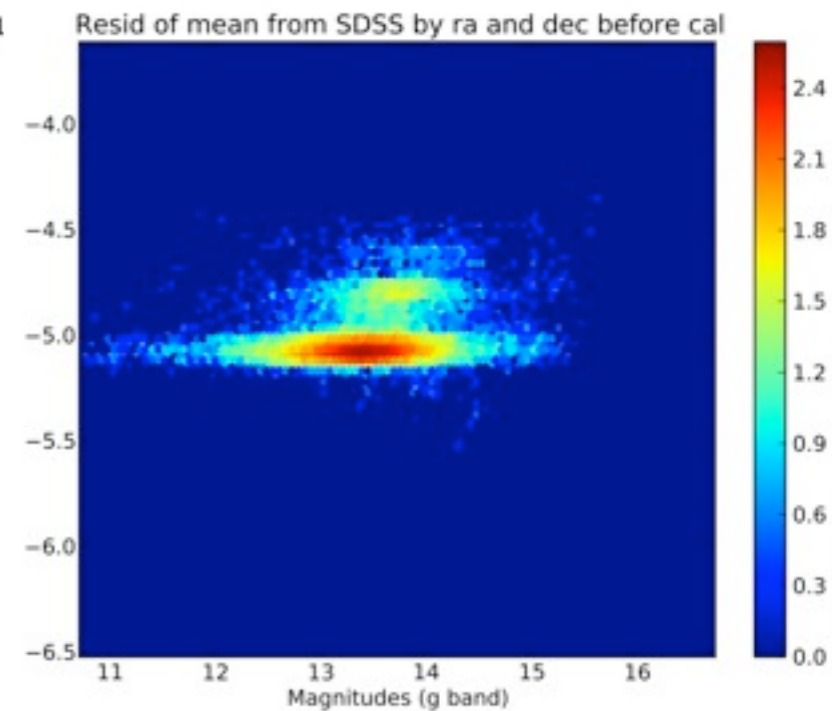
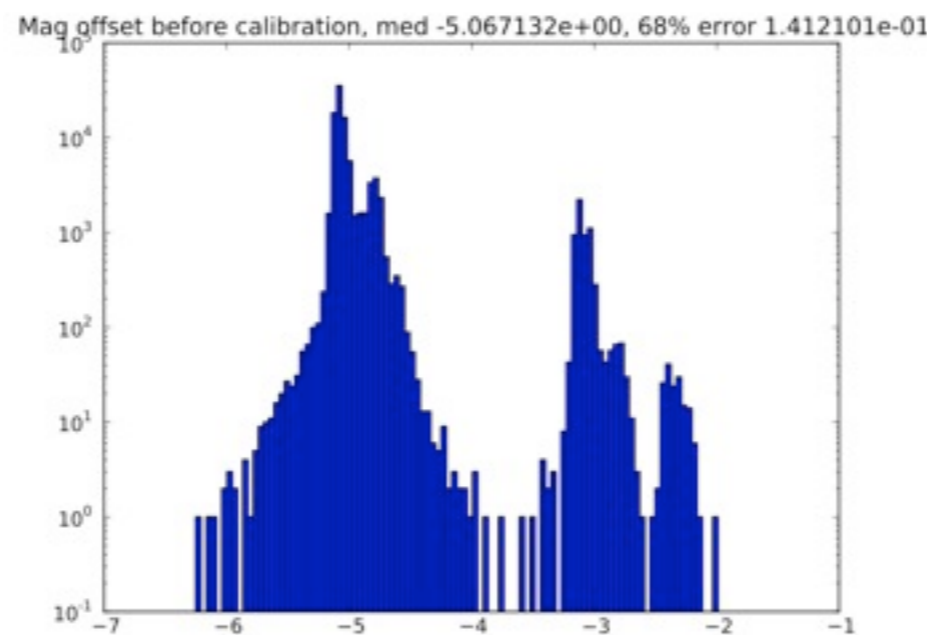
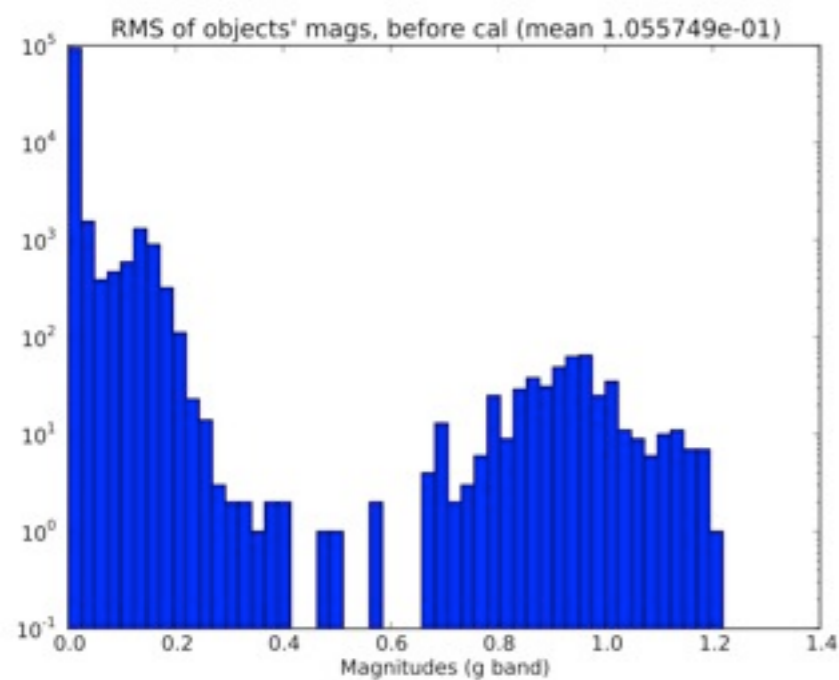


after
color terms

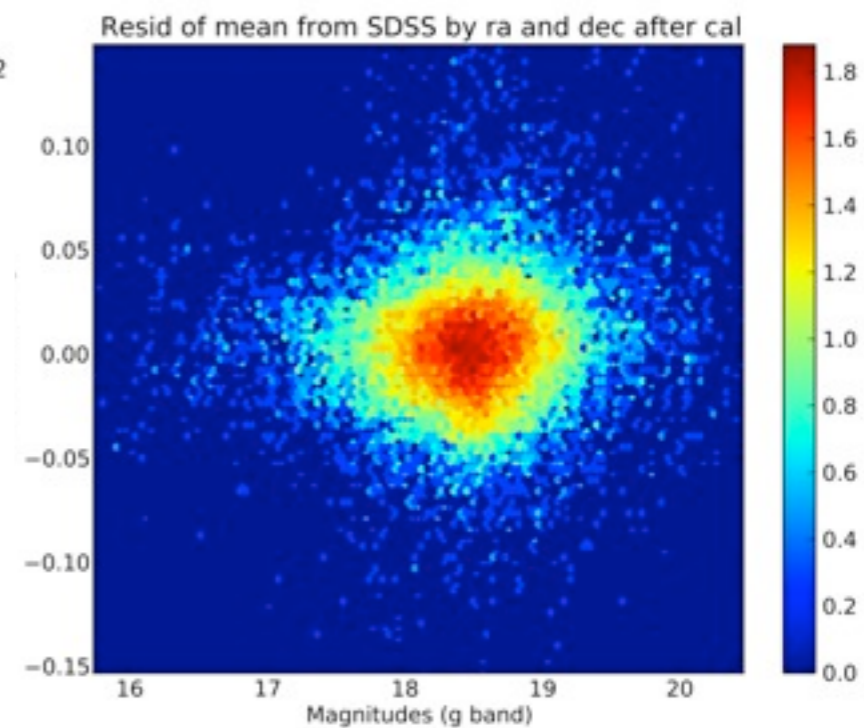
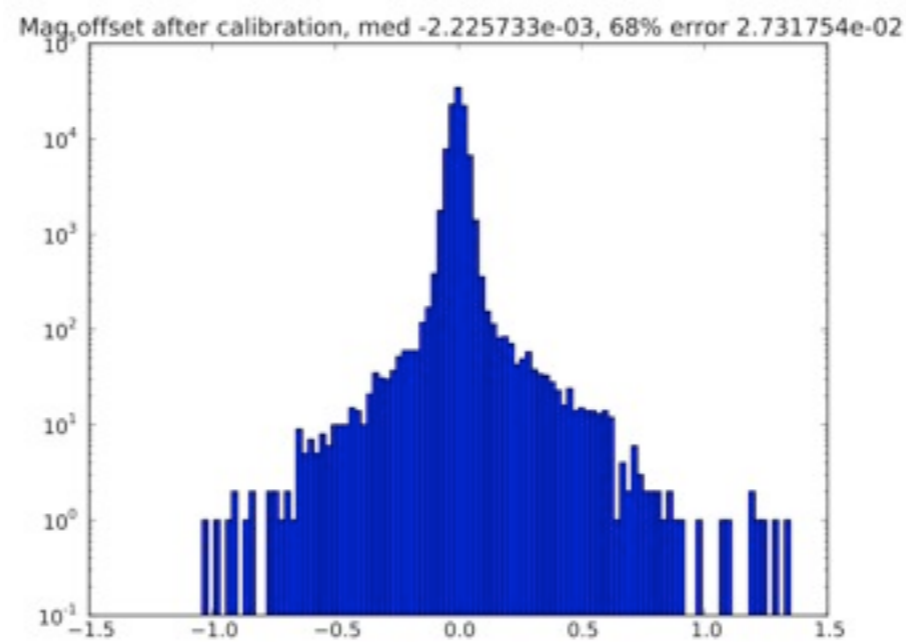
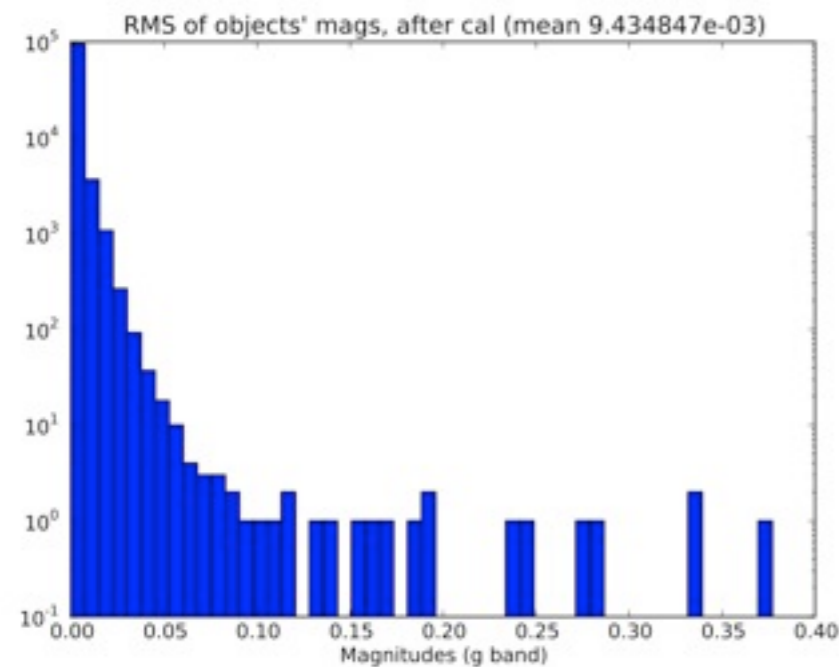


g band

before

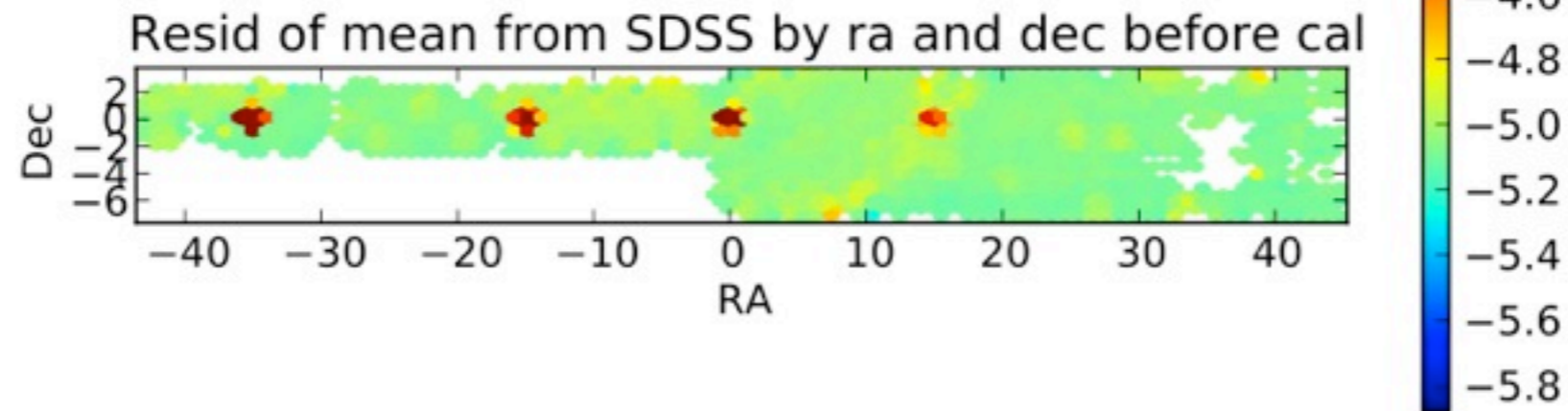


after

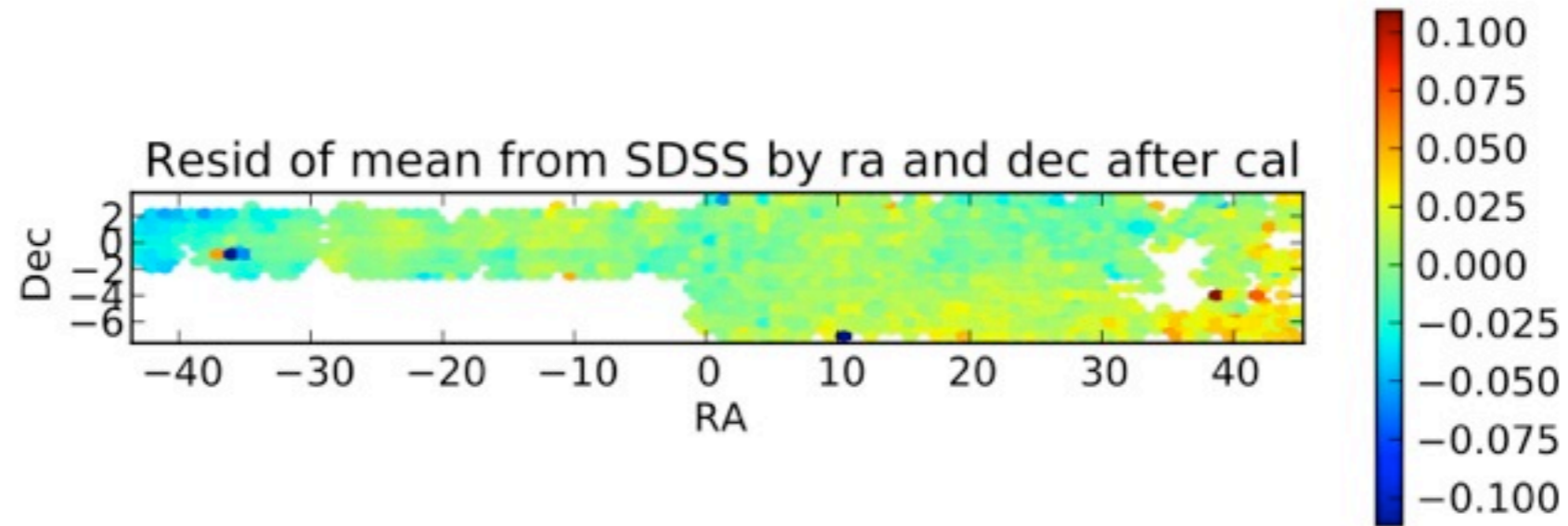


g band

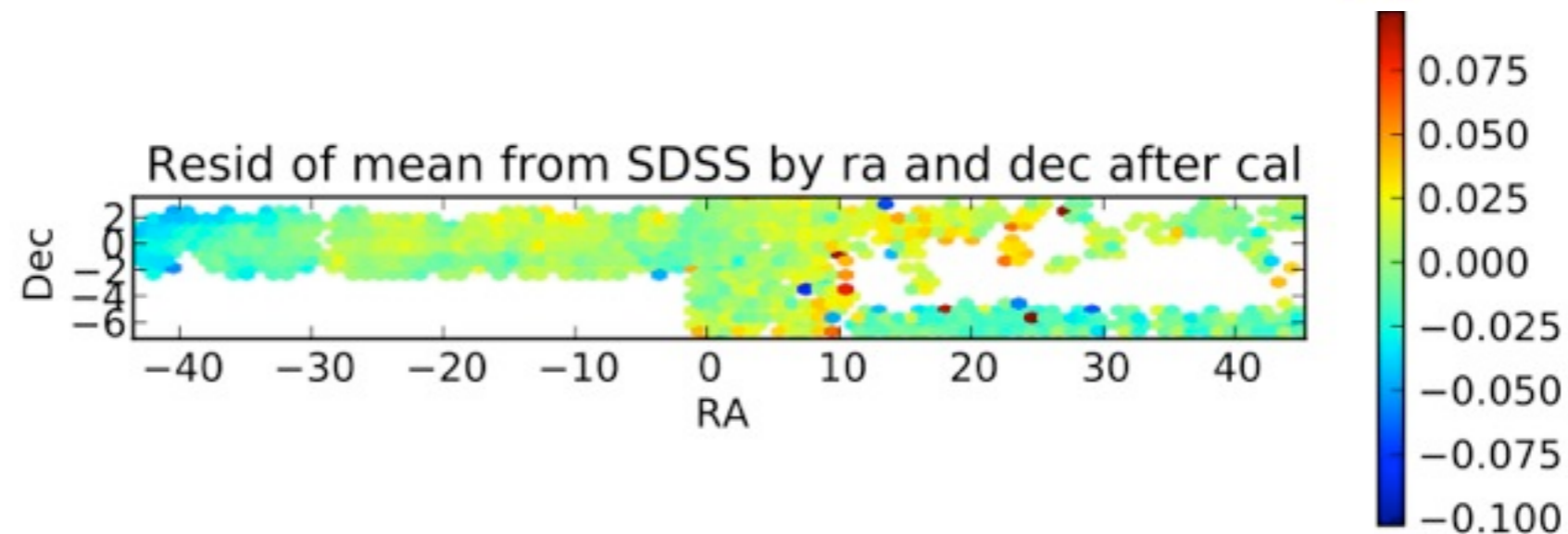
before



after nebencal
#1

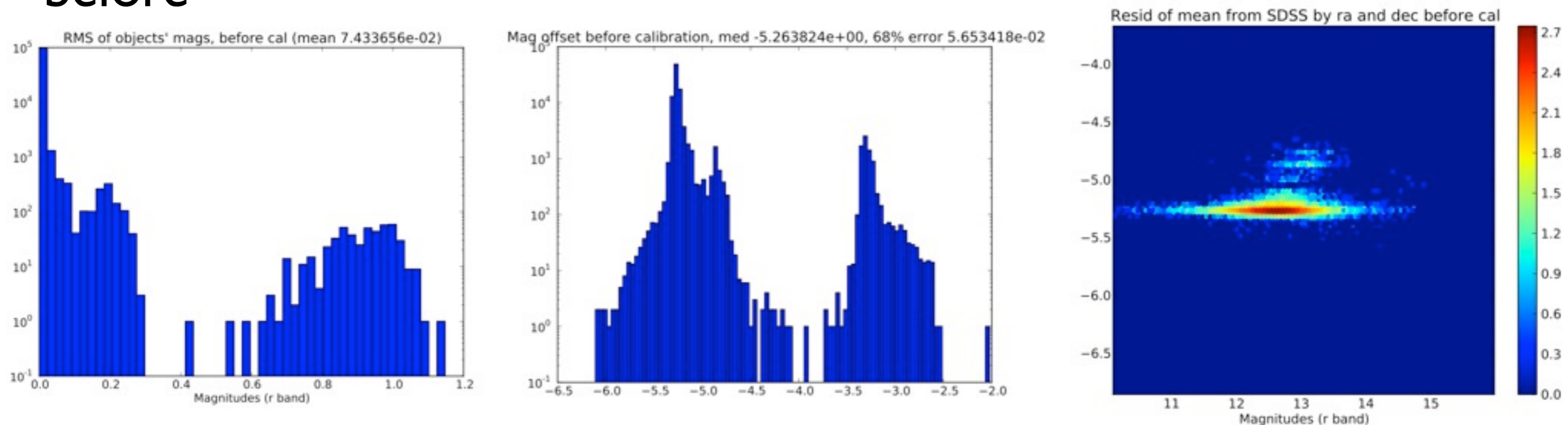


after
color terms

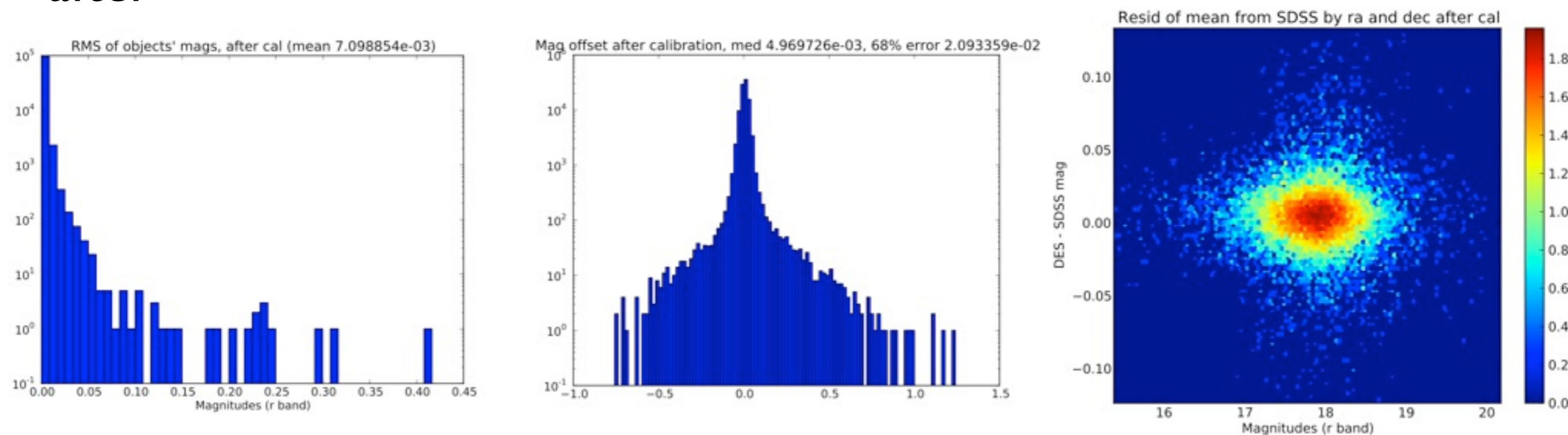


r band

before

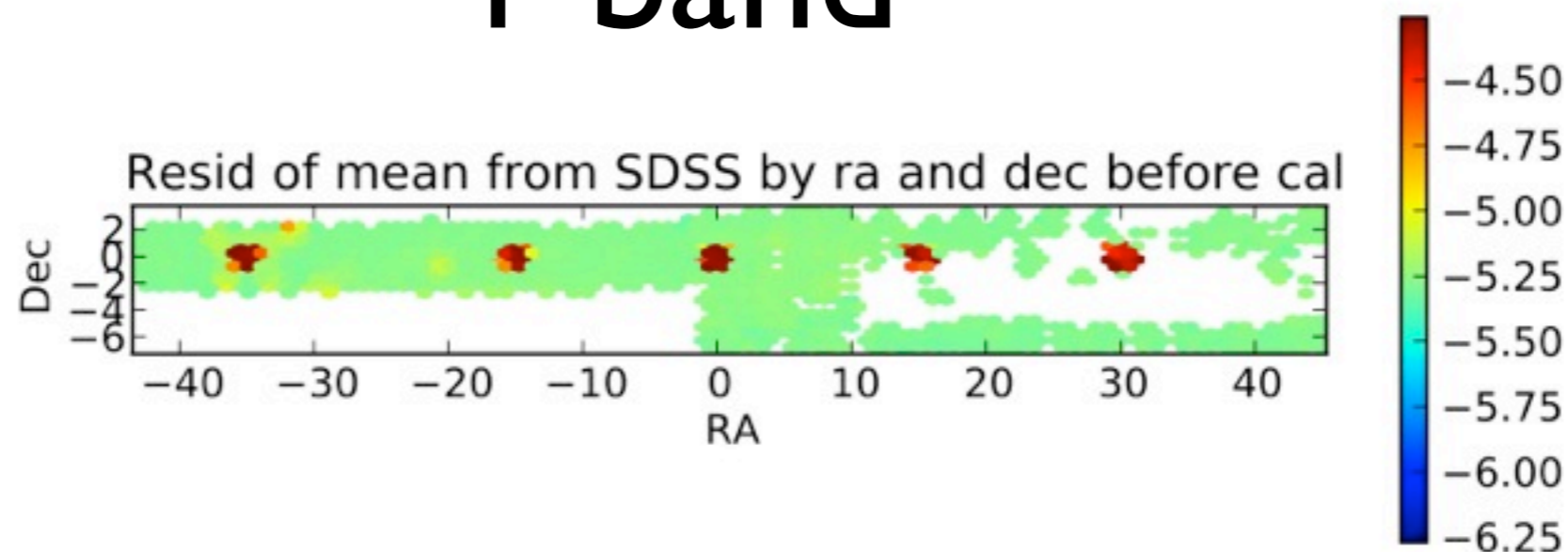


after

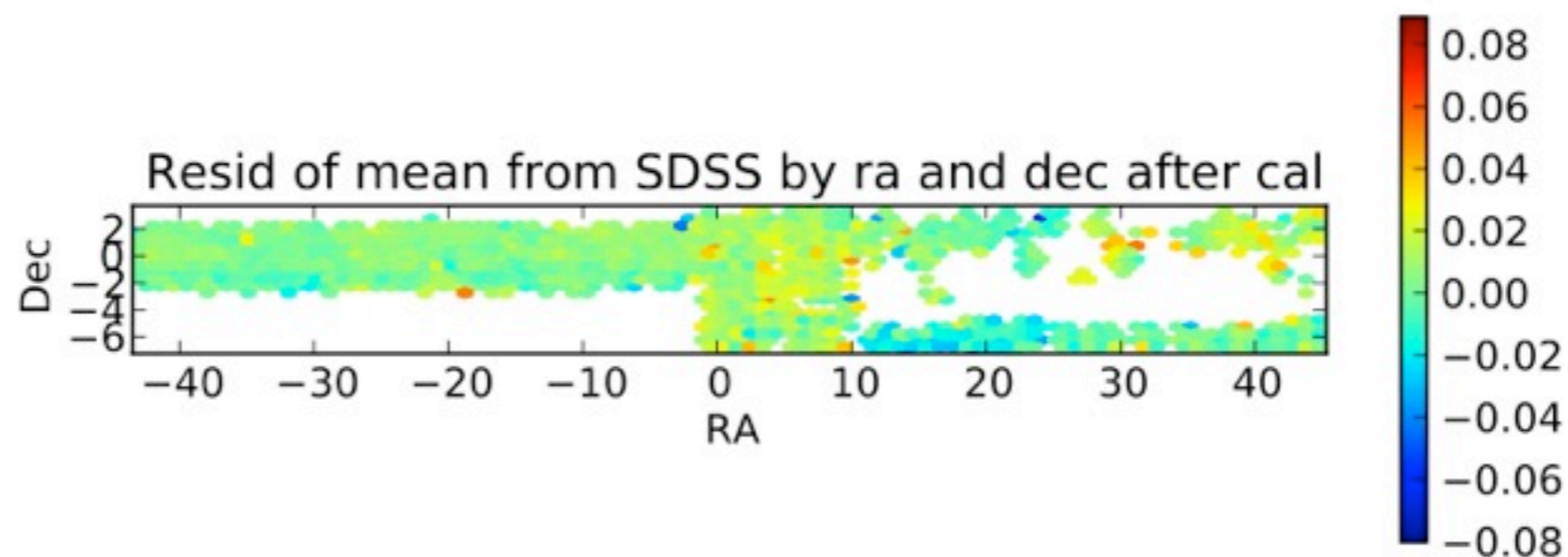


r band

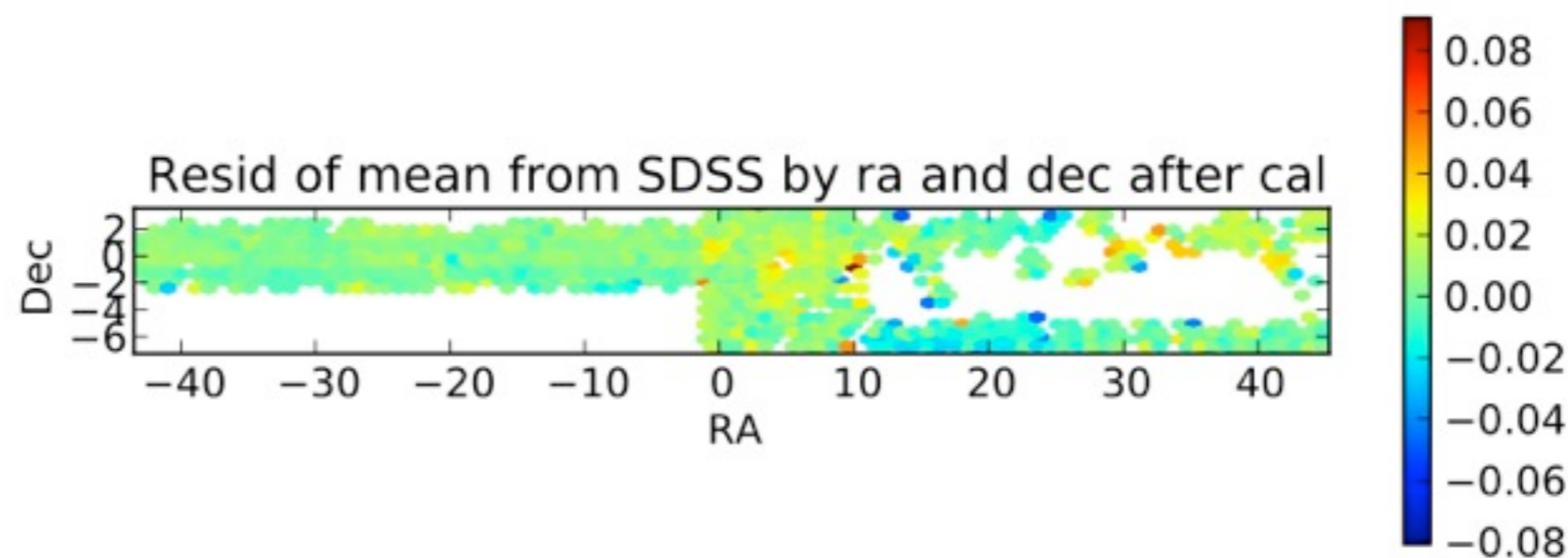
before



after nebencal
#1

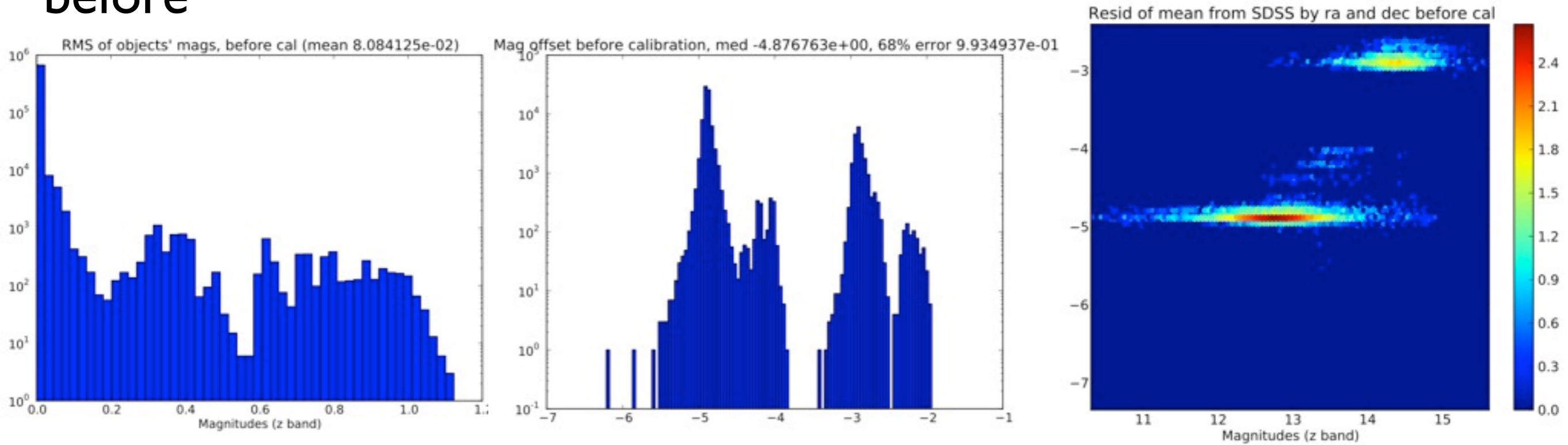


after
color terms

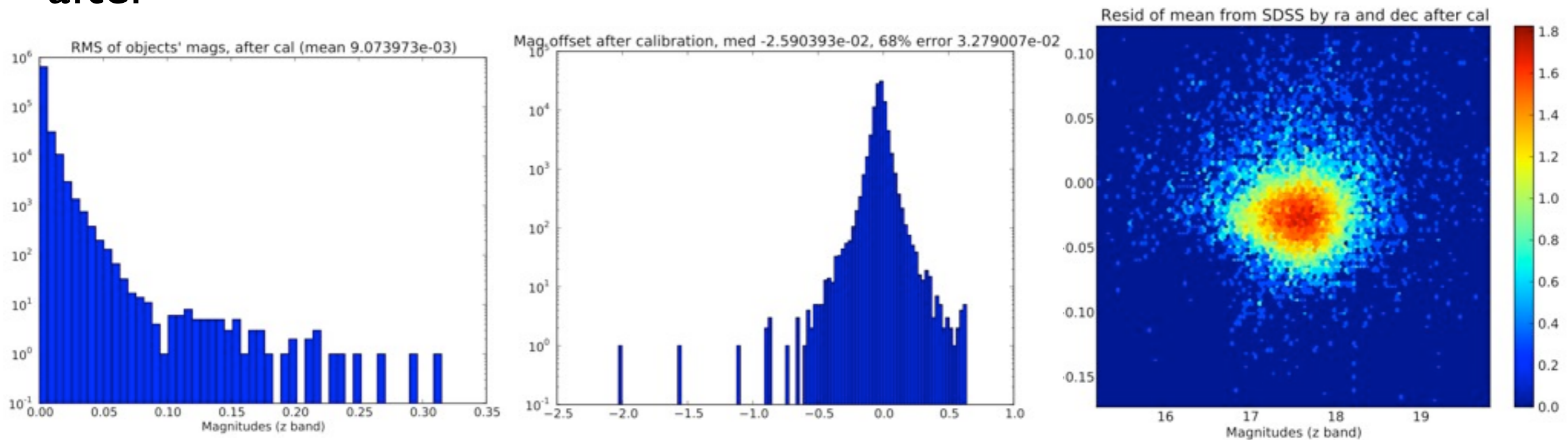


z band

before

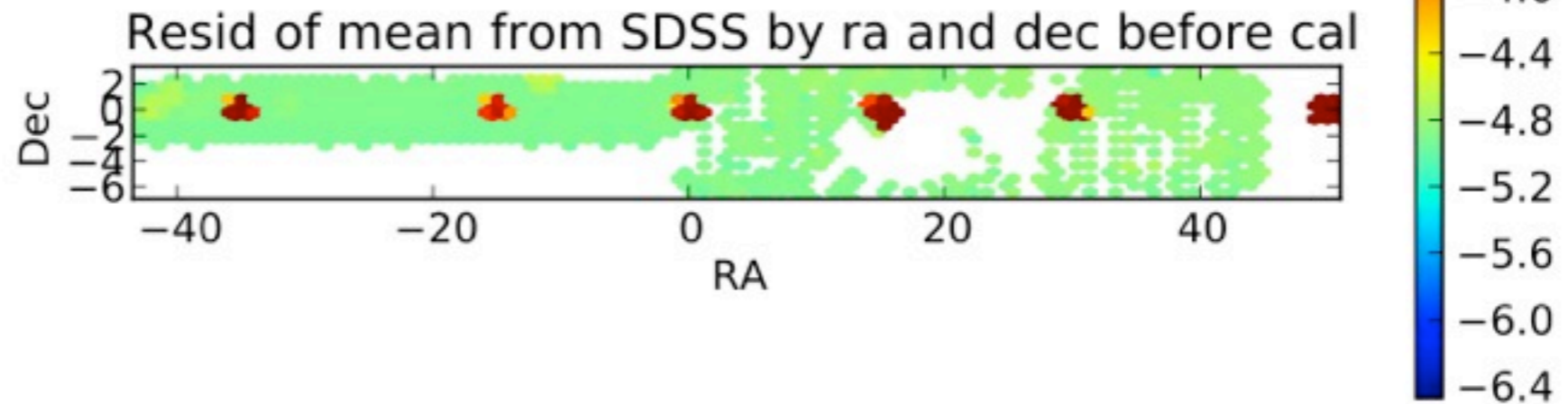


after

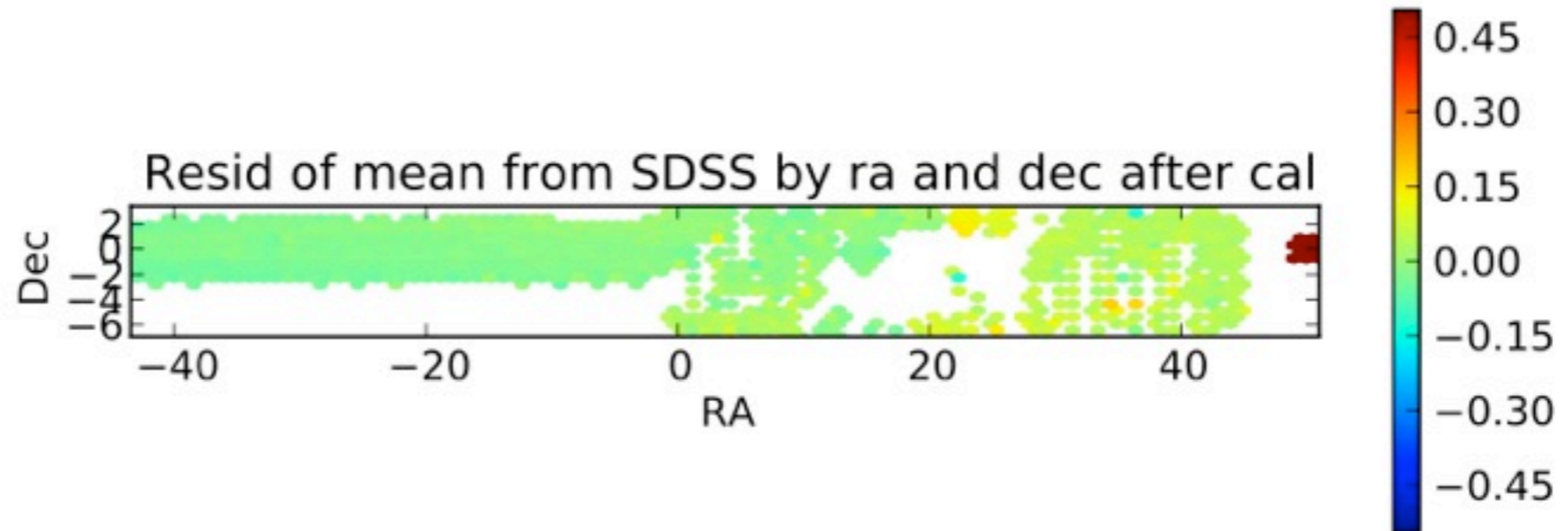


z band

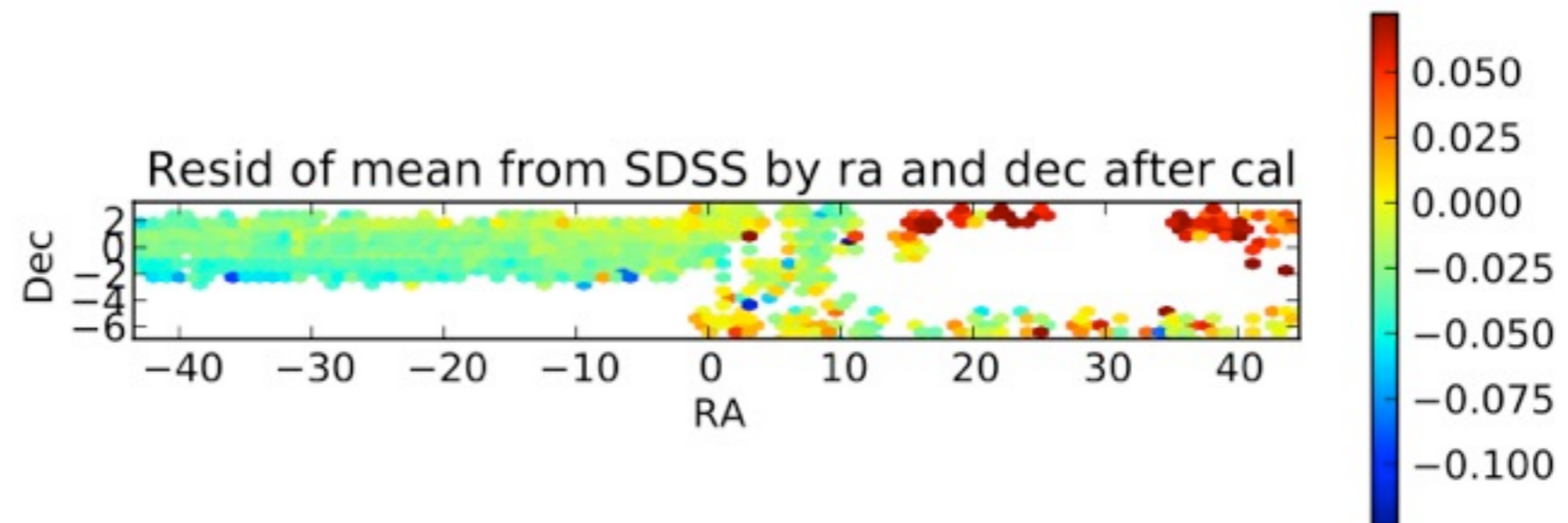
before



after nebencal
#1

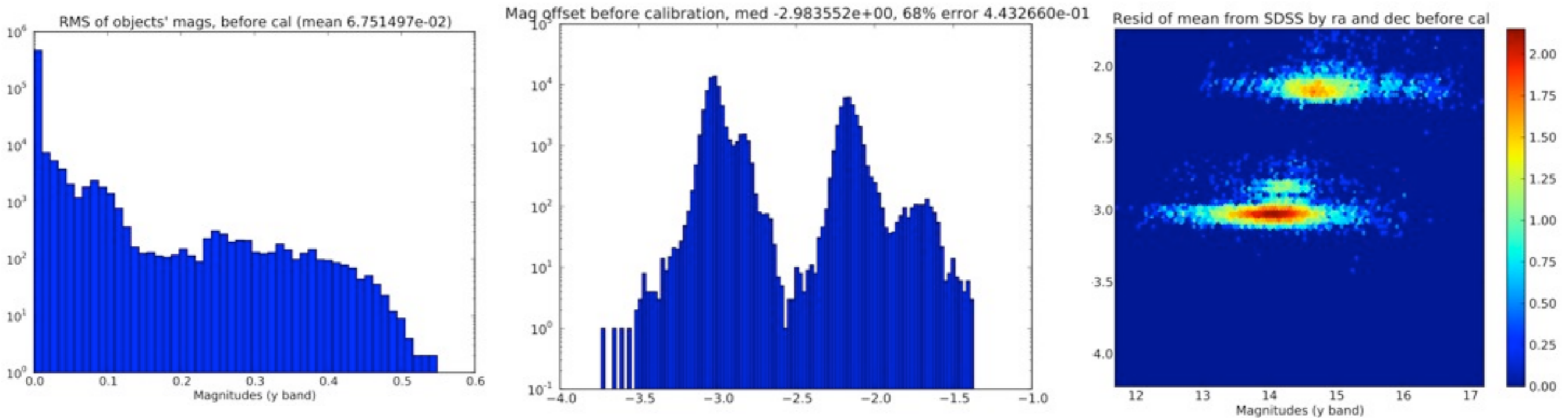


after
color terms

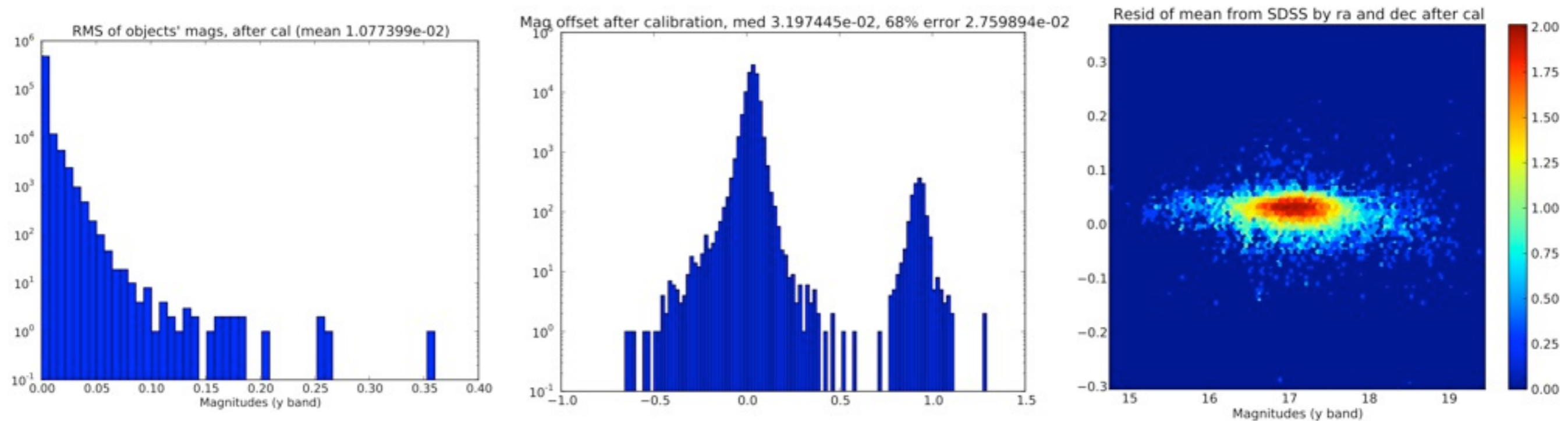


y band

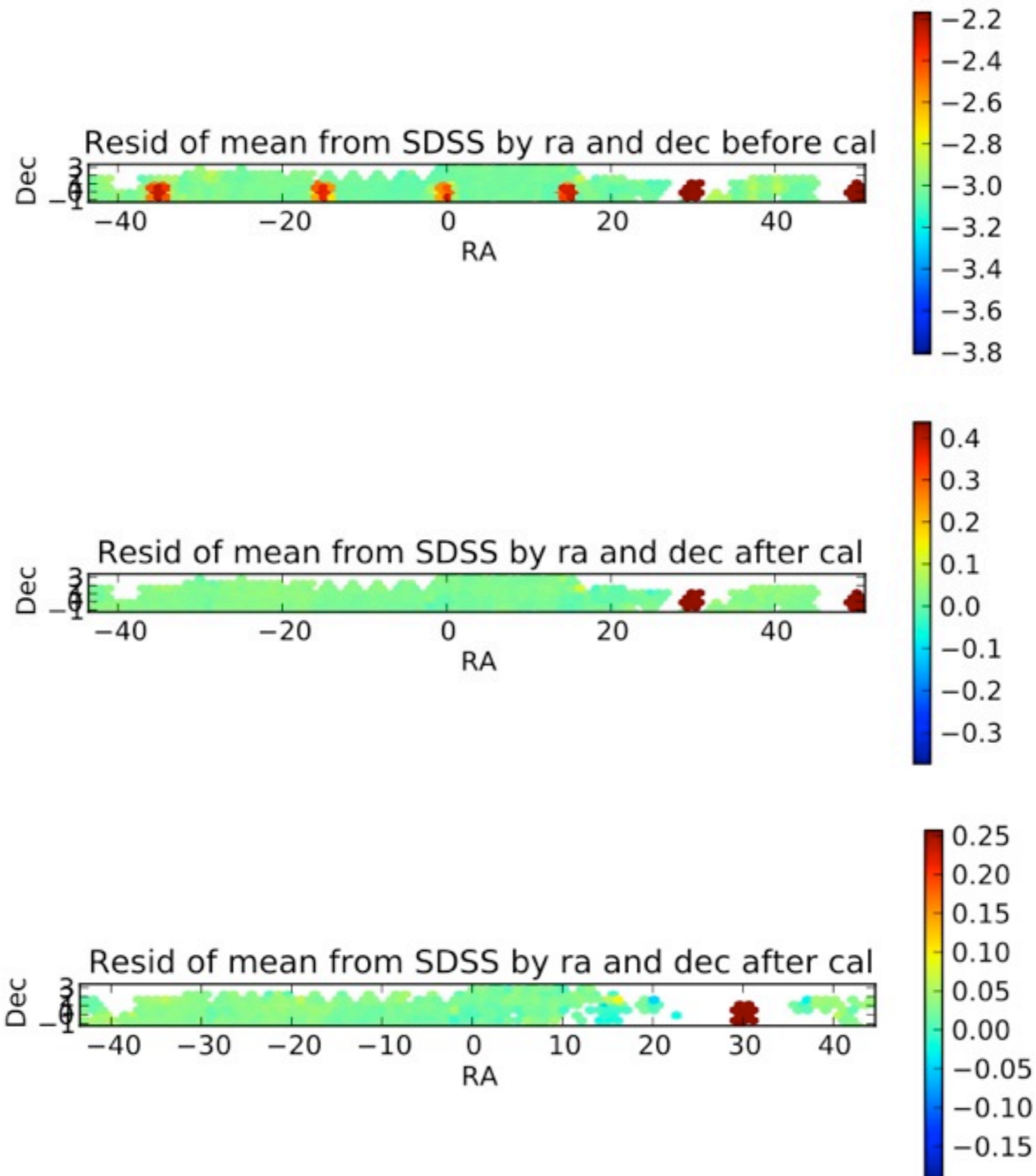
before



after



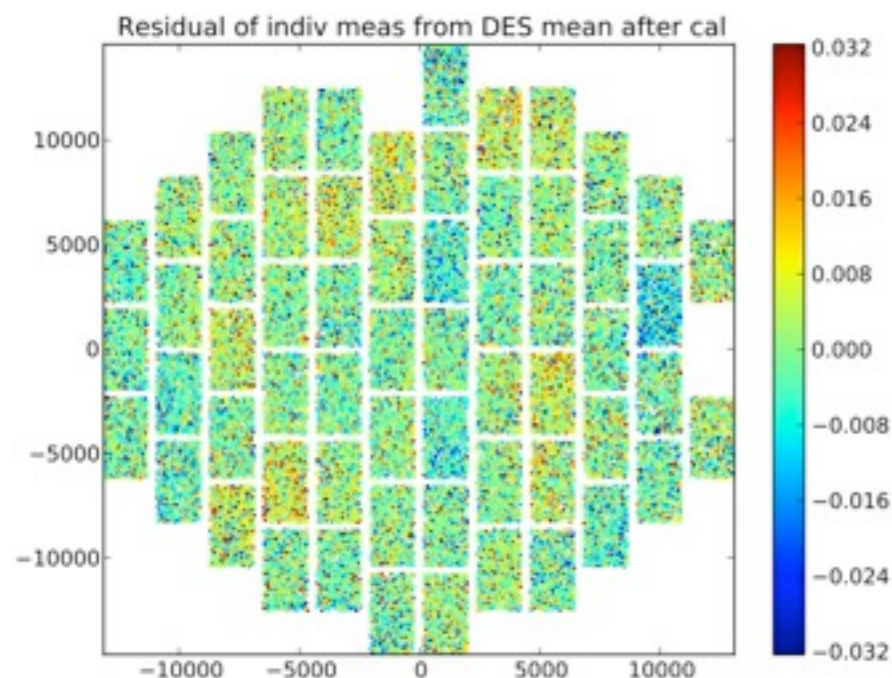
y band



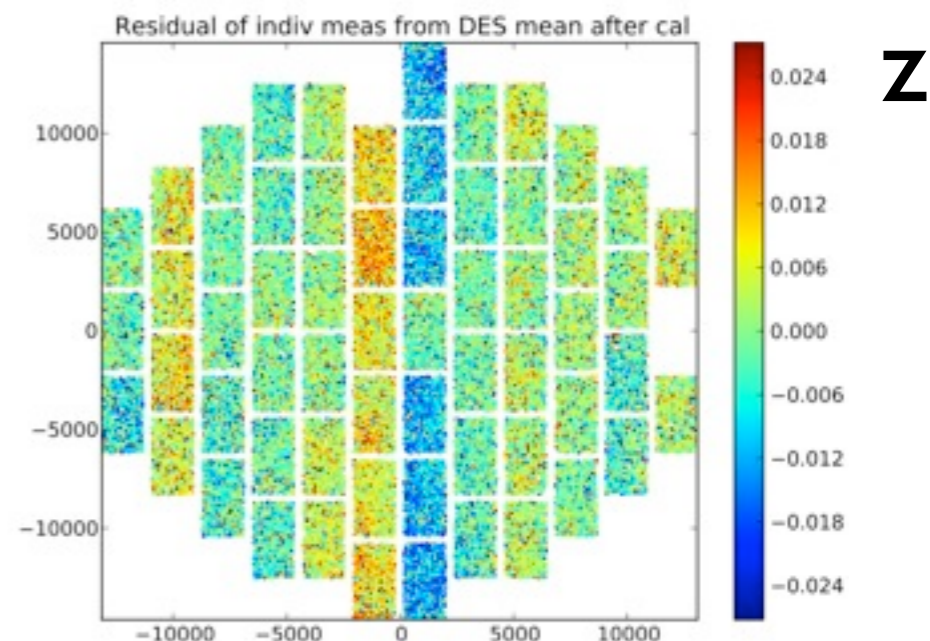
Comments

- To do: reimplement the disjoint region cut
- The color correction usually slightly increases the internal RMS of the objects but improves the RMS agreement with SDSS. As expected.
- (Is this robust or noise, due to the loss of objects after matching between colors?)
- So, it's working ok and seems robust, but not super precise: 2-3% vs SDSS.

y



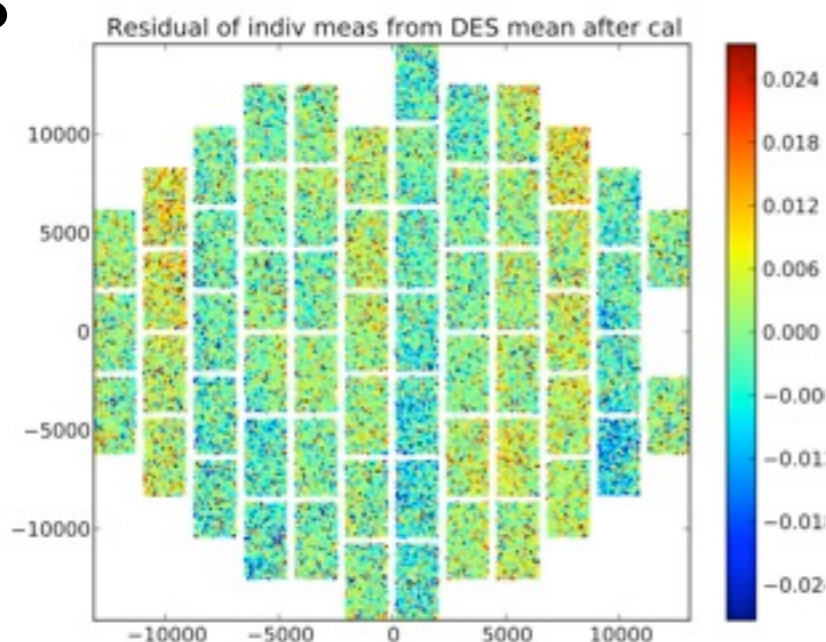
To do



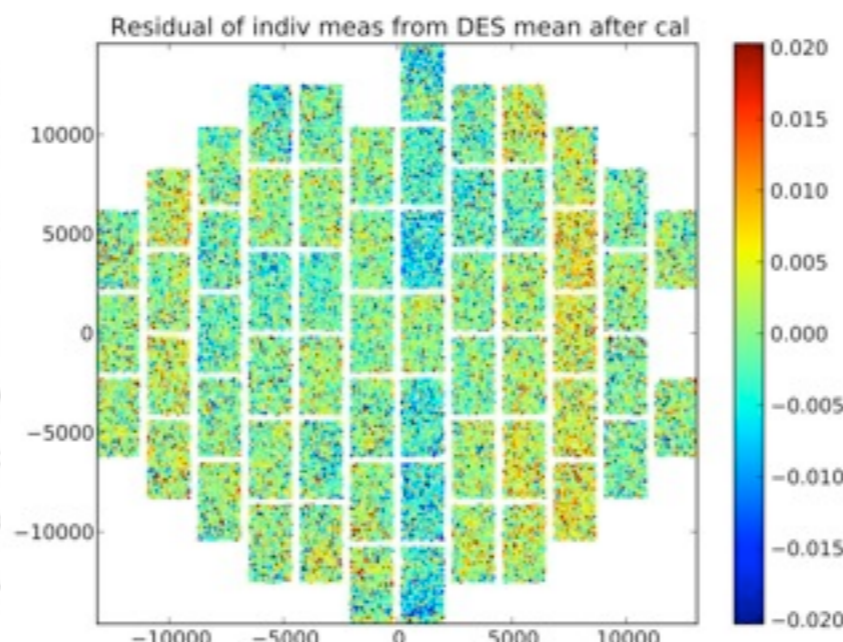
z

- I. There are chip-by-chip residuals (poor flat field?). Calibrating again by chip introduces a big gradient in some cases (at least i band).....

g



r



i

